

lifting surface of about 200 square feet, lifted 29,000 feet of wire weighing 75 pounds, and the meteorograph recording barometric pressure, air temperature and relative humidity, and wind velocity to the height of 11,444 feet above the hill. A maximum wind velocity of 40 miles an hour was encountered at a height of 11,000 feet, the surface wind being 22 miles an hour. The temperature at the highest point reached was 38° and the air was very dry, while at the ground at the same time the temperature of the air was 75° and its relative humidity 60 per cent. In September, 1897, the meteorograph was twice maintained at the nearly uniform height of 1,700 feet during the greater portion of twenty-four hours and flights were made on seven consecutive days. A discussion, by Mr. Clayton, of these records has been published as Bulletin No. 2 of the observatory under the title: Examples of the Diurnal and Cyclonic Changes of Temperature and Relative Humidity at Different Heights in the Free Air. In July, 1898, a practically continuous record at a greater altitude was obtained during a day and a night. Kites are frequently employed at Blue Hill to measure the heights of the lower surfaces of certain low and uniform clouds which could not be measured by either photographic or visual theodolites. By the traces of the barometer and hygrometer the thickness of clouds may be determined.

In conclusion, it may be affirmed that the Blue Hill experiments have demonstrated the possibilities of kites for the meteorological study of the free air up to a height of at least 2 miles above the earth.<sup>1</sup> The reasons for the superiority of kites over balloons, whenever there is wind, are stated by me in the Strassburg Aeronautische Mittheilungen for April, 1898. At the meeting of the International Aeronautical Committee in Strassburg last April I had the honor to present a report on the subject. The conference recommended that all the central observatories employ this method of investigation as being of prime importance for meteorology. (See MONTHLY WEATHER REVIEW, April, 1898.) At the present time kites are so employed at stations of the United States Weather Bureau, at St. Petersburg, and near Paris. Experiments with kites to obtain meteorological data are also being made in Scotland, the birth place of scientific kite flying, and a similar use of kites is proposed at some of the mountain meteorological stations on the continent of Europe, at the Deutsche Seewarte in Hamburg, and at the Prussian Meteorological Institute in Berlin.

#### PROF. PARK MORRILL.

By Prof. E. B. GARBIOTT.

Park Morrill, Professor of Meteorology, United States Weather Bureau, died August 7, 1898, of typhoid fever, after an illness of three weeks.

Professor Morrill was born in Malden, Ill., in 1860; was graduated from Amherst College in 1881, and enlisted in the United States Signal Corps January 6, 1882. He was assigned to the Baltimore station of the Signal Service, August 8, 1882, for the purpose of pursuing a course of study at Johns Hopkins University for "the acquirement of an experimental and theoretical knowledge of those branches of physics that relate to meteorology, especially heat and electricity."

During the period of his assignment at Baltimore he was

<sup>1</sup>The readers of the MONTHLY WEATHER REVIEW will scarcely need to be reminded that the works of A. Wilson, Ronalds and Birt, D. Archibald, William Eddy, A. McAdie, L. Hargrave, and others demonstrated the possibilities of kites for use in the study of meteorology of the free air at great heights some time before this work was taken up at Blue Hill. The employment of kites at the United States Weather Bureau stations was quite independent of the brilliant work done at Blue Hill or the recommendations of the International Committee. The advantages of kites over balloons are clearly stated by Prof. Willis L. Moore, Chief of the Weather Bureau, in Symons' Monthly Magazine for December, 1896, page 166.—En.

promoted to the rank of sergeant, to date July 12, 1885, and his detail at that place was terminated September 5, 1887. While serving as assistant at Boston, Mass., Mr. Morrill was ordered to assume charge of the Signal Service exhibit at the Paris Exposition, and in the performance of this duty he remained in Paris from March 25 to December 2, 1889. At the close of the exposition he returned to the Boston station. On July 1, 1891, he was appointed an observer in the Weather Bureau, and on October 2, 1891, was made local forecast official and placed in charge of the station at Atlanta, Ga., where he remained until September, 1894, when he was transferred to the Central Office, at Washington, for duty as forecast official, to which position he was appointed September 15, 1894. On July 16, 1898, he was made a professor of meteorology in the Weather Bureau and assigned to the charge of the establishment of the West Indian Weather Service.

Possessed of rare mental attainments which were developed by a college training, and ripened by five years of special study and investigation, Professor Morrill was eminently well equipped for a most useful and even brilliant career in his chosen field of work.

His ability and zeal in prosecuting work of a congenial nature was exemplified in the last year of his life. His work, Floods of the Mississippi, will long be considered a standard book of reference, and he will, for all time, be recognized as one of the first active workers in the organization of the West Indian Weather Service, a service which promises to prove of incalculable value to the maritime interests of the United States, the West Indies, and Central America.

Of a disposition generous and genial, he was beloved by those who knew him best. In his death the Weather Bureau loses one of its most gifted members, and the science of meteorology one of its most promising disciples.

#### THE PUBLISHED WORKS OF PROFESSOR MORRILL.

By the Editor.

In 1881 Gen. W. B. Hazen introduced new life into the service by securing the enlistment of young men of collegiate and scientific training. Mr. Morrill was among these and immediately after completing the course of instruction in signaling and meteorology at Fort Myer, Va., he was assigned to duty at the Johns Hopkins University for the purpose of maintaining a series of observations in atmospheric electricity under the special guidance of Prof. H. A. Rowland. The importance of this subject had been urged from a hygienic point of view by the American Climatological Association. A full account of his electrical work is given by Prof. T. C. Mendenhall, in his memoir of 1889, entitled A Report of Studies of Atmospheric Electricity, published in Volume V of the Memoirs of the National Academy of Sciences, Washington, 1891. Mr. Morrill's work at Baltimore included the establishment of a Mascart self-registering apparatus for atmospheric electricity, and he was the first to maintain such continuous record in this country; its importance was such that the complete record is published in the memoir by Mendenhall, pages 173-207. In 1878 Mr. Morrill was assigned to the station at Boston, and in that connection reestablished the Mascart apparatus at the Massachusetts Institute of Technology, where the record was maintained during the greater part of a year, until his departure for Paris. Mr. Morrill's work at Baltimore is highly spoken of in Professor Mendenhall's report. He, himself, published in Signal Service Note, No. 17, A first Report upon Observations upon Atmospheric Electricity at Baltimore. He also invented a mechanical collector to replace the Thompson water dropping collector, ordinarily used in connection with the Mascart apparatus, and which is fully described on pages 126 and 127 of Mendenhall's report. He